

Applicant _____		Analysis _____																
Analyzer _____		Range _____																
PERFORMANCE PARAMETER	Table B-1 spec.	TEST															No. of test failures	Pass or fail
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
NOISE, ppm	0% URL (S ₀)																	
	80% URL (S ₈₀)																	
LDL (must be 2 × noise)																		
INTER- FERENCE EQUIV. ALENT, ppm	IE ₁																	
	IE ₂																	
	IE ₃																	
	IE ₄																	
	IE ₅																	
	TOTAL (IE _T)																	
ZERO DRIFT, ppm	12 hour (12ZD)																	
	24 hour (24ZD)																	
SPAN DRIFT, %	20% URL (MSD)																	
	80% URL (USD)																	
LAG TIME, min																		
RISE TIME, min																		
FALL TIME, min																		
PRECISION, ppm	20% URL (P ₂₀)																	
	80% URL (P ₈₀)																	

^aCompare each test LDL reading with the corresponding noise measurements. LDL reading must exceed the 0% URL noise value by a factor of 2 to pass the test for LDL.

Figure B-6. Form for summary of test results.

[40 FR 7049, Feb. 18, 1975, as amended at 40 FR 18169, Apr. 25, 1975]

Subpart C—Procedures for Determining Comparability Between Candidate Methods and Reference Methods

SOURCE: 62 FR 38792, July 18, 1997, unless otherwise noted.

§ 53.30 General provisions.

(a) *Determination of comparability.* The test procedures prescribed in this subpart shall be used to determine if a candidate method is comparable to a reference method when both methods measure pollutant concentrations in ambient air.

(1) Comparability is shown for SO₂, CO, O₃, and NO₂ methods when the differences between:

(i) Measurements made by a candidate manual method or by a test analyzer representative of a candidate automated method.

(ii) Measurements made simultaneously by a reference method, are less than or equal to the values specified in the last column of table C-1 of this subpart.

(2) Comparability is shown for lead methods when the differences between:

(i) Measurements made by a candidate method.

(ii) Measurements made by the reference method on simultaneously collected lead samples (or the same sample, if applicable), are less than or equal to the value specified in table C-3 of this subpart.

(3) Comparability is shown for PM₁₀ and PM_{2.5} methods when the relationship between:

(i) Measurements made by a candidate method.

(ii) Measurements made by a reference method on simultaneously collected samples (or the same sample, if applicable) at each of two test sites, is such that the linear regression parameters (slope, intercept, and correlation coefficient) describing the relationship meet the values specified in table C-4 of this subpart.

(b) *Selection of test sites*—(1) *All methods*. Each test site shall be in a predominately urban area which can be shown to have at least moderate concentrations of various pollutants. The site shall be clearly identified and shall be justified as an appropriate test site with suitable supporting evidence such as maps, population density data, vehicular traffic data, emission inventories, pollutant measurements from previous years, concurrent pollutant measurements, and meteorological data. If approval of a proposed test site is desired prior to conducting the tests, a written request for approval of the test site or sites must be submitted prior to conducting the tests and must include the supporting and justification information required. The Administrator may exercise discretion in selecting a different site (or sites) for any

additional tests the Administrator decides to conduct.

(2) *Methods for SO₂, CO, O₃, and NO₂*. All test measurements are to be made at the same test site. If necessary, the concentration of pollutant in the sampled ambient air may be augmented with artificially generated pollutant to facilitate measurements in the specified ranges described under paragraph (d)(2) of this section.

(3) *Methods for Pb*. Test measurements may be made at any number of test sites. Augmentation of pollutant concentrations is not permitted, hence an appropriate test site or sites must be selected to provide lead concentrations in the specified range.

(4) *Methods for PM₁₀*. Test measurements must be made, or derived from particulate samples collected, at not less than two test sites, each of which must be located in a geographical area characterized by ambient particulate matter that is significantly different in nature and composition from that at the other test site(s). Augmentation of pollutant concentrations is not permitted, hence appropriate test sites must be selected to provide PM₁₀ concentrations in the specified range. The tests at the two sites may be conducted in different calendar seasons, if appropriate, to provide PM₁₀ concentrations in the specified ranges.

(5) *Methods for PM_{2.5}*. Augmentation of pollutant concentrations is not permitted, hence appropriate test sites must be selected to provide PM_{2.5} concentrations and PM_{2.5}/PM₁₀ ratios (if applicable) in the specified ranges.

(i) Where only one test site is required, as specified in table C-4 of this subpart, the site need only meet the PM_{2.5} ambient concentration levels required by § 53.34(c)(3).

(ii) Where two sites are required, as specified in table C-4 of this subpart, each site must be selected to provide the ambient concentration levels required by § 53.34(c)(3). In addition, one site must be selected such that all acceptable test sample sets, as defined in § 53.34(c)(3), have a PM_{2.5}/PM₁₀ ratio of more than 0.75; the other site must be selected such that all acceptable test sample sets, as defined in § 53.34(c)(3), have a PM_{2.5}/PM₁₀ ratio of less than 0.40. At least two reference method

PM₁₀ samplers shall be collocated with the candidate and reference method PM_{2.5} samplers and operated simultaneously with the other samplers at each test site to measure concurrent ambient concentrations of PM₁₀ to determine the PM_{2.5}/PM₁₀ ratio for each sample set. The PM_{2.5}/PM₁₀ ratio for each sample set shall be the average of the PM_{2.5} concentration, as determined in § 53.34(c)(1), divided by the average PM₁₀ concentration, as measured by the PM₁₀ samplers. The tests at the two sites may be conducted in different calendar seasons, if appropriate, to provide PM_{2.5} concentrations and PM_{2.5}/PM₁₀ ratios in the specified ranges.

(c) *Test atmosphere.* Ambient air sampled at an appropriate test site or sites shall be used for these tests. Simultaneous concentration measurements shall be made in each of the concentration ranges specified in tables C-1, C-3, or C-4 of this subpart, as appropriate.

(d) *Sample collection—(1) All methods.* All test concentration measurements or samples shall be taken in such a way that both the candidate method and the reference method receive air samples that are homogenous or as nearly identical as practical.

(2) *Methods for SO₂, CO, O₃, and NO₂.* Ambient air shall be sampled from a common intake and distribution manifold designed to deliver homogenous air samples to both methods. Precautions shall be taken in the design and construction of this manifold to minimize the removal of particulates and trace gases, and to ensure that identical samples reach the two methods. If necessary, the concentration of pollutant in the sampled ambient air may be augmented with artificially-generated pollutant. However, at all times the air sample measured by the candidate and reference methods under test shall consist of not less than 80 percent ambient air by volume. Schematic drawings, physical illustrations, descriptions, and complete details of the manifold system and the augmentation system (if used) shall be submitted.

(3) *Methods for Pb, PM₁₀ and PM_{2.5}.* The ambient air intake points of all the candidate and reference method collocated samplers for lead, PM₁₀ or PM_{2.5} shall be positioned at the same

height above the ground level, and between 2 and 4 meters apart. The samplers shall be oriented in a manner that will minimize spatial and wind directional effects on sample collection.

(4) *PM₁₀ methods employing the same sampling procedure as the reference method but a different analytical method.* Candidate methods for PM₁₀ which employ a sampler and sample collection procedure that are identical to the sampler and sample collection procedure specified in the reference method, but use a different analytical procedure, may be tested by analyzing common samples. The common samples shall be collected according to the sample collection procedure specified by the reference method and shall be analyzed in accordance with the analytical procedures of both the candidate method and the reference method.

(e) *Submission of test data and other information.* All recorder charts, calibration data, records, test results, procedural descriptions and details, and other documentation obtained from (or pertinent to) these tests shall be identified, dated, signed by the analyst performing the test, and submitted. For candidate methods for PM_{2.5}, all submitted information must meet the requirements of the ANSI/ASQC E4 Standard, sections 3.3.1, paragraphs 1 and 2 (reference 1 of appendix A of this subpart).

§ 53.31 Test conditions.

(a) *All methods.* All test measurements made or test samples collected by means of a sample manifold as specified in § 53.30(d)(2) shall be at a room temperature between 20 °C and 30 °C, and at a line voltage between 105 and 125 volts. All methods shall be calibrated as specified in paragraph (c) of this section prior to initiation of the tests.

(b) *Samplers and automated methods.* (1) Setup and start-up of the test analyzer, test sampler(s), and reference method (if applicable) shall be in strict accordance with the applicable operation manual(s). If the test analyzer does not have an integral strip chart or digital data recorder, connect the analyzer output to a suitable strip chart or digital data recorder. This recorder shall have a chart width of at least 25